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10 Projects for a Compliant Architecture

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Liam Ross



10 Projects for a

Compliant Architecture

10 projects for a Compliant Architecture

Liam Ross

Selected Projects, MArdes Seniour Honours Option 2008/2009

University of Edinburgh, College of Humanities and Social Science
School of Arts, Culture and Environment, Department of Architecture

			Introduction	4
		Building Standard	Project	
	FIRE	2.6.3 Spread to Neighbouring Buildings	FRONTING THE CLOSENESS <i>Sara Oxley</i>	6
		2.8.1 Spread from Neighbouring Buildings	FIRESIDE MANNERS <i>Staszek Stuart-Thompson</i>	8
	ENVIRONMENT	3.6 Surface Water Drainage	ATMOSPHERIC MECHANISMS <i>Gillian Storrar</i>	10
		3.11.6 Drying of Washing	AERATING THE REGULAR <i>Daniel Goodacre</i>	12
		3.16 Natural Lighting	EYELINES AND SKYLINES <i>Alistair Blake</i>	14
	SAFETY	4.1.7 Accessible Entrance	VISION CUTS <i>Alex MacGruer</i>	16
		4.2.2 Access within Buildings	SHIFTY CHARACTER <i>Joel Woodier</i>	18
		4.3.2 Riser of Stairs	LUNGE PLAN <i>Steven Bauman</i>	20
		4.3.2 Going of Stairs	SYNCOATED SCALES <i>Thomas Gibson</i>	22
		4.8.3 Cleaning of Windows	STAGED SALUTATIONS <i>Lucy Brooke</i>	24



Compliant. *adj.*

1. Complying, disposed to comply; ‘civil, complaisant’; ready to yield to the wishes or desires of others.
2. Yielding to physical pressure, pliant.
- B. One who complies; a complier.
3. Yielding and adaptative to conditions.^a

Compliant Architecture is a design, research and teaching project based at the University of Edinburgh. It conducts text-based research into the emergence of building regulations, design-research that illustrates the limits they impose, and taught design modules that explore the architectural potential of those limits.

This document presents selected projects from a 10 week architectural design studio completed as part of the MA Architectural Design programme at the University of Edinburgh, 2008-09. Each projects begins with an analysis of a single clause of the Scottish Building Standards. Students provide a brief verbal and diagrammatic description of the regulation, coming to understand the hazard it represents, and seeks to limit; trips and slips on stairs and ramps, falls from height while cleaning windows, lack of access to daylight. The projects continue by identifying an architectural potential in the limitation of these risks; that a regulated stair acts as an index of the familiarity of its users, that a window choreographs and represents the everyday act of its cleaning, that a window negotiates and represents a relation between programme and context. Each project concludes through the design of a mixed-use building in the centre of Edinburgh, playing-out the implications of the limit in a range of circumstances.

^a OED, second edition, 1989

Regulating Education

ARB General Criteria 10 stipulates that Part 1 & 2 architecture students should be taught the necessary skills to meet buildings users’ requirements within the constraints imposed by regulation. Graduating students should be able to prepare designs that comply with UK legislation, including those requirements imposed by the Health and Safety Executive^a. However, despite this ARB’s requirement, most practicing architects suggest they receive inadequate training in legislative requirements while at University^b. The reasons for this are perhaps easy to understand; legislative requirements tend be satisfied through the demonstration of compliance, and so appear opposed to creativity, their end being necessarily pre-determined. Teaching design on the basis of regulatory compliance, then, is perhaps likely to lead to standardized and formulaic design. As such the satisfaction of both the ARB and regulatory requirements are often annexed from the design studio, to be demonstrated through separate ‘compliance projects’.

Regulating Design

This attitude to the ARB requirements parallels (perhaps establishing, re-enforcing, or simply reflecting) professional attitudes to regulation generally. Building practice is subject to a widespread and sophisticated regulatory framework - from professional codes of conduct, building standards and technical guidelines, to contractual protocols, planning permissions, and consultation procedures – and qualified architects, like their educators, consider the burden of demonstrating compliance with extensive, expanding and constantly changing requirements a hindrance to the creative process, leading to standardised and formulistic buildings^c. That is, professional practice is characterised by the same polarisation between the creativity and subjective freedom associated with design, and the apparently objective requirements of regulation, tending to think of the requirements and rationale of planners and regulators as ‘external’ to architecture.

Re-distributing Risk and Responsibility

This is not simply a question of ‘attitudes’. The purpose of governmental regulation is precisely to define certain aspect of the design of the built environment as outwith the responsibility of architects. New regulatory requirements generate new disciplines, expertise and professions to take responsibility for them, and architects and educators are correct to recognise regulation as a disciplinary threat; that decisions about the design of the built environment are increasingly determined by agencies outside the profession necessarily limits the architects’ own agency. This is not necessarily a bad thing, however, the fragmentation within the design professions - between the subjective and objective potential of building - can lead to a reduction in the potential of architecture. On the one hand, regulations define an increasing proportion of the design of the built environment – from the detailed design of a specific project, to whole sectors of the industry – as non-architectural. These aspect of design are taken out of the hands of clients and their agents, and pre-determined by apparently objective standards. On the other hand, with the architect’s control of building often reduced to that of an interface manager satisfying the needs of others, they often seek to defend their subjective agency as designers. Indeed, the ‘design intent’ of much contemporary architecture appears reduced to that of a signature gesture that representing nothing but the symbolic authorial control of the architect.

a Architects Registration Board, 2010, ‘Prescription of Qualifications: ARB Criteria at Parts 1, 2, & 3’, ARB: London, p.6.
b R. and Street, E. 2006, ‘The attitudes of architects towards planning regulation and control’, Project Paper 3: ‘Papers in the codification and regulation of architects’ practices’, October 2006, Department of Geography, King’s College London, London, p. 6
c Ibid, pp. 9-12

Problematising Creative Freedom

What attitude should architects, and architectural educators, take to the regulation of building, then? This pamphlet forms part of a teaching and research project – Compliant Architecture - reflecting on this question. It documents 10 undergraduate student projects that - while demonstrating compliance with UK legislative requirements and ARB criteria – develop a specific attitude to regulation, which could be summarised as follows: The first premise of these projects is to invert the ubiquitous critique that regulations frustrate architects’ creative freedom. If freedom is that “area in which the subject... should be left to do or be what he is able to do or be, without interference by other persons”^a regulations are in fact a means to establish and safeguard freedom; regulations define an area in which architects, clients, and building users are freed to practice, without posing a risk to each-other. However, this project suggests that the disciplinary challenge posed by regulation is, perversely, the freedom that regulation offers. By taking responsibility for the risk that building poses to ourselves and others, regulations free architects from that opportunity, and it is only through our exposure to risk that we – whether we are architects or building users - develop and communicate subjectivity.

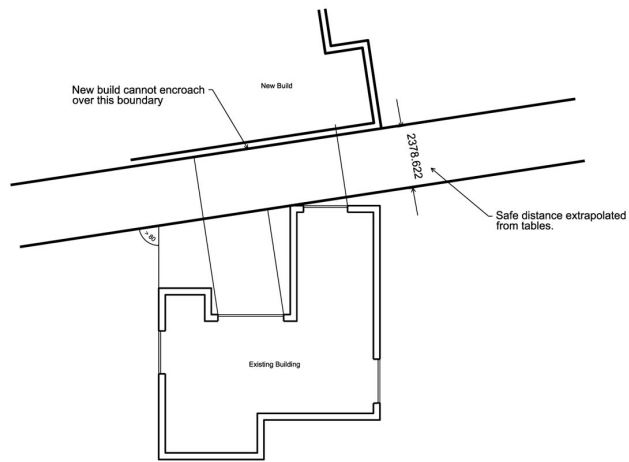
The Materiality of Risk

The second premise of the project, then, is that the risk of building is not a purely negative phenomena; the excitement of a tall space is commensurate with the possibility of a fall; a sense of enclosure is commensurate to a risk of entrapment; the opportunity provided by an opening is commensurate to the possibility that something, or someone, will pass through it. Risk is simply an aspect of the materiality of building, and not something it could ever be freed from. This project approaches regulation, then, not as a means of negating risk, but rather as a means of coming to know it. The student projects presented here employ regulatory limits as means of naming, drawings out, indexing and exposing the risks that buildings inherently pose.

Dramatising and Exposing Risk

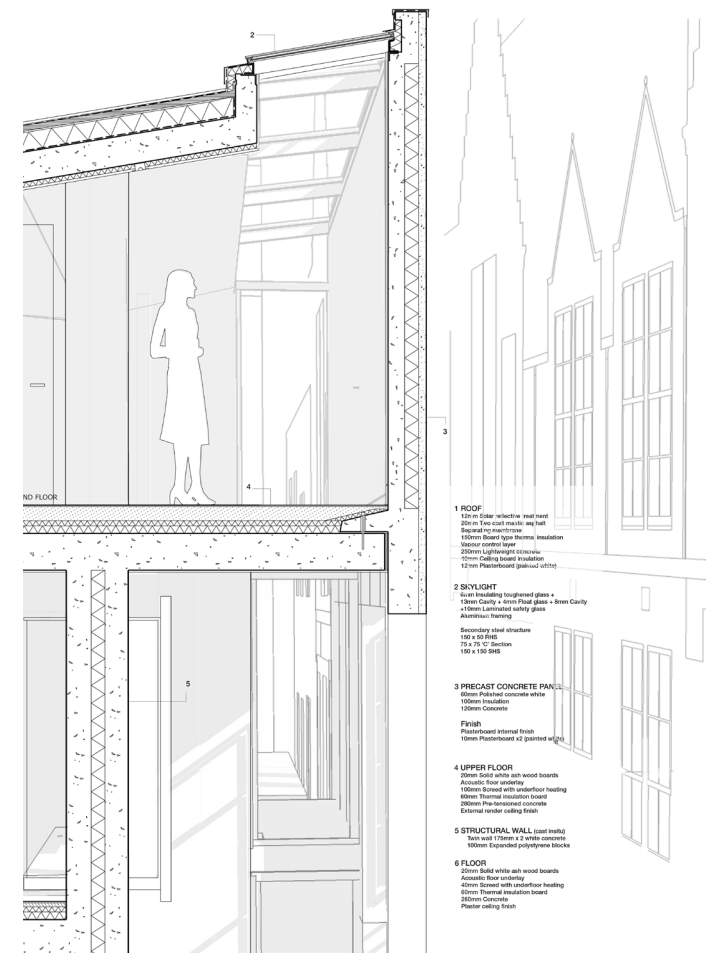
Finally, this project contends that the limitation and exposure of risk is not a purely objective concern, but is rather part of architecture’s subjective project; it suggests that architecture communicates through the attitude it takes to risk. The 10 projects represented here turn their attention to aspects of building that are risky, and that are closely regulated: spread of flame, surface water drainage, day-lighting and ventilation, corridor widths and visibility, stair and ramp geometries, and the sizes and configurations of openings. They do not seek to negate these risk, but rather appropriate regulatory limits as a means to finely calibrating our exposure to them; carefully considering – for instance - our familiarity with the geometry of a staircase, the chance of bumping into someone in the corridor, the distance water is allowed to ingress into building, which parts of a plan are naturally lit, or the distance we have to stretch in cleaning our windows. That is, while the projects comply with specific clauses of UK legislation, they do not consider this to be an end in itself. Rather, they enjoy regulatory limits as a means of designing with and dramatizing the inherent risk of building.

a Berlin, Isaiah. 1958. Two Concepts of Liberty. Oxford: Clarendon Press, p. 10

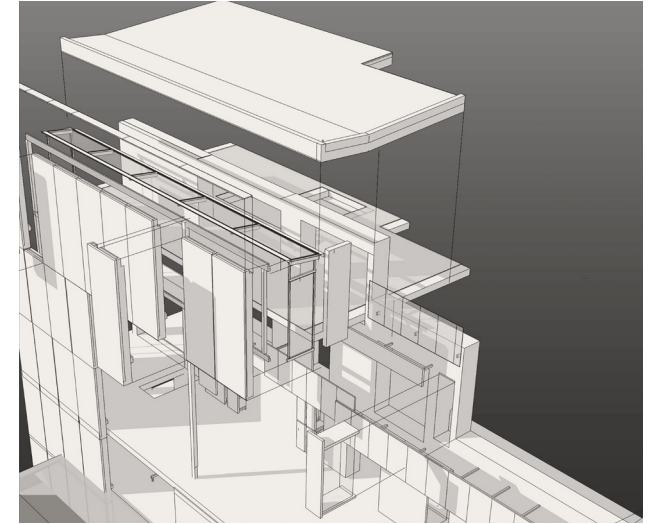


Every building must be designed and constructed in such a way that in the event of an outbreak of fire within the building, the spread of fire to neighbouring buildings is inhibited. Where the external wall of a buildings is more than 1m from the boundary the amount of glazing (m²) may be equivalent to six times the distances (m) to the boundary.

2.6.3 FIRE | Spread to Neighbouring Buildings



Facade section, exploded axonometric and elevation of proposed gallery and apartment development



FRONTING THE CLOSENESS

Sara Oxley

Regulation 2.6.3 imposes the requirement to step back from the boundary when opening up. This requirement offers a language of publicity and privacy suitable to the extraordinary closeness of Edinburgh's medieval Close's. A gallery steps back to form a forecourt and open façade. Private apartments step forward to maximise footprint. The emphatically layered construction provides long oblique views and avoids overlooking, while enjoying a frontality implicit to the regulation.



Double elevation of Advocates Close identifying extent of overlooking; compliant and non-compliant glazing highlighted



Elevation of proposed gallery and apartment development, superimposed on opposing elevation



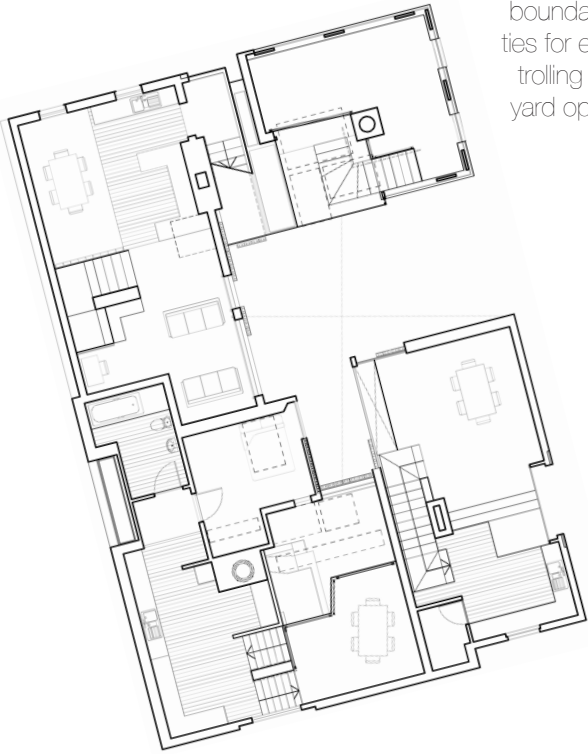
Every building must be designed and constructed in such a way that in the event of an outbreak of fire in a neighbouring building, the spread of fire to the building is inhibited. The roof of a building, including any roof lights, should have a low vulnerability if not more than 6m from the boundary.

2.8.1
FIRE | Spread From Neighbouring Buildings

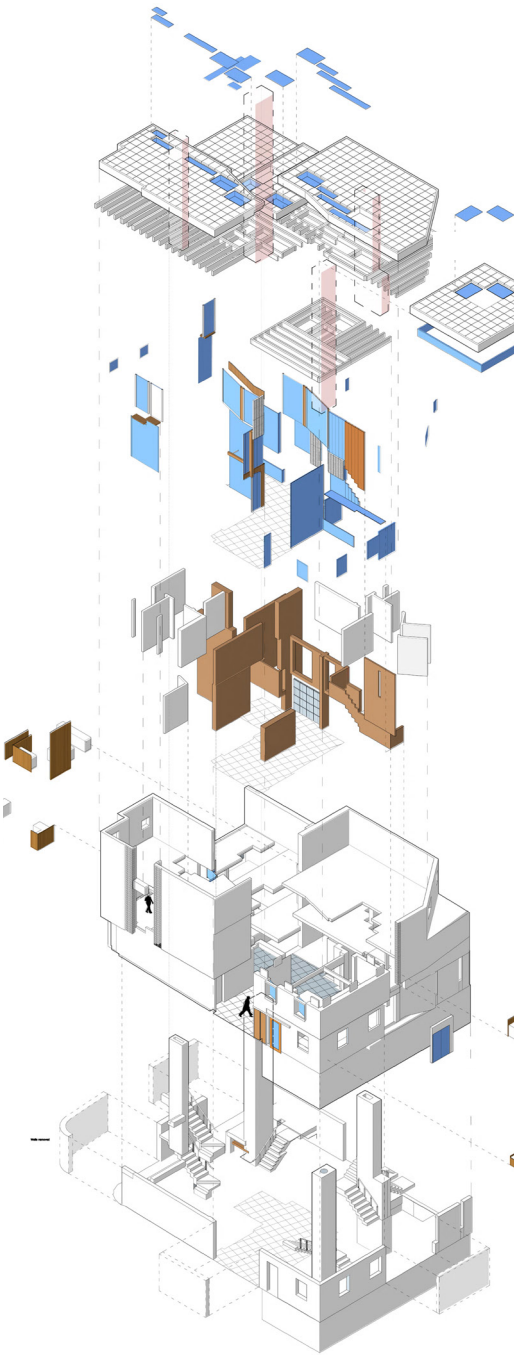
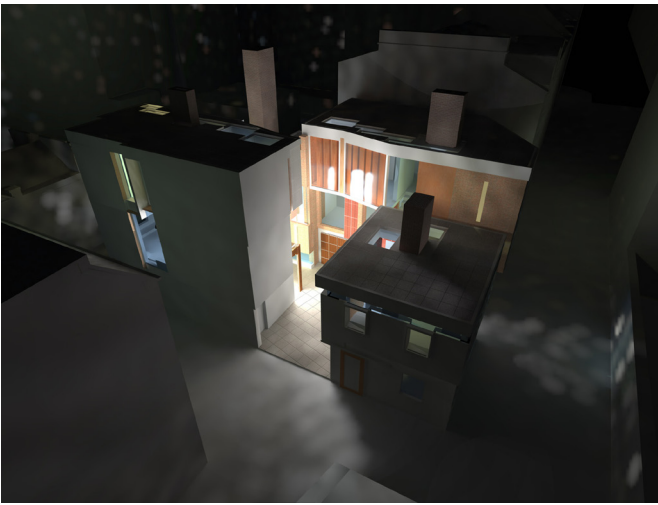
FIRESIDE MANNERS

Staszek Stuart-Thompson

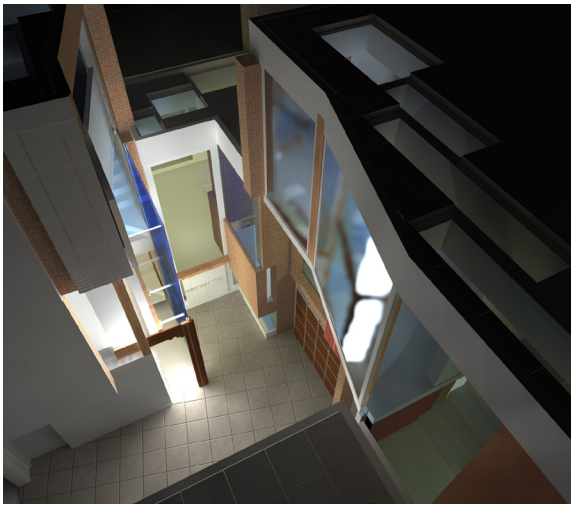
3 dwellings and a bakery are organised around four chimneys, set 6m from the boundary. The chimneys locate the vertical circulation, heating and cooking facilities for each building. The perimeter of the site is formed by a protective wall, controlling limited glimpses between inside and out. To the interior an intimate courtyard opens up, framed by lightweight and vulnerable walls. At night, the flickering of domestic lights in the courtyard forms a campfire for the street.



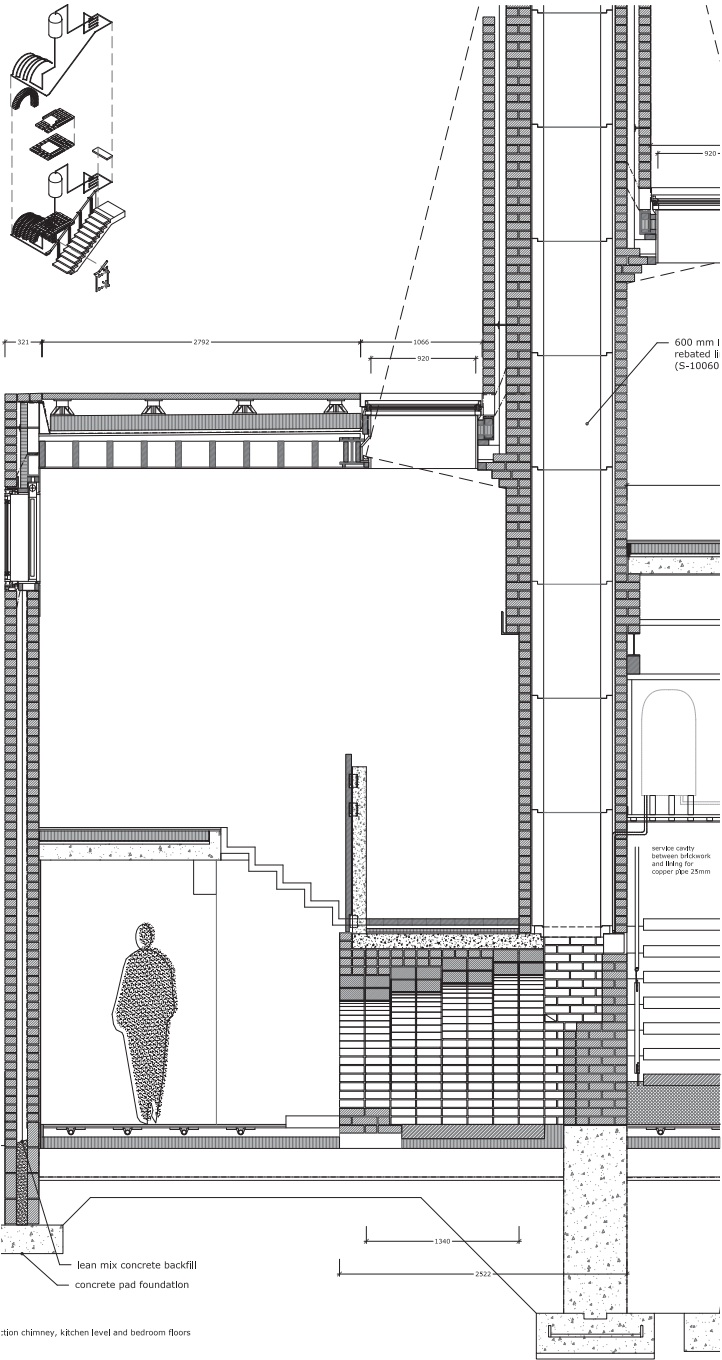
Ground floor plan of proposed courtyard development, showing relation of chimney and stair; render showing night-time view of courtyard

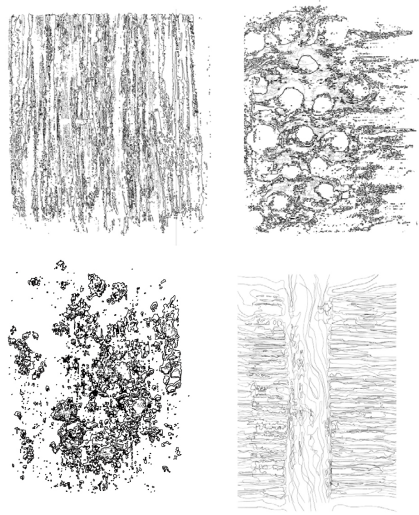


Exploded axonometric showing chimneys, carpark, courtyard linings, roof and rooflights; detailed section of chimney including axonometric of heated balustrade



Renders showing night-time view of courtyard and arrangement of fireplace, stair and kitchen



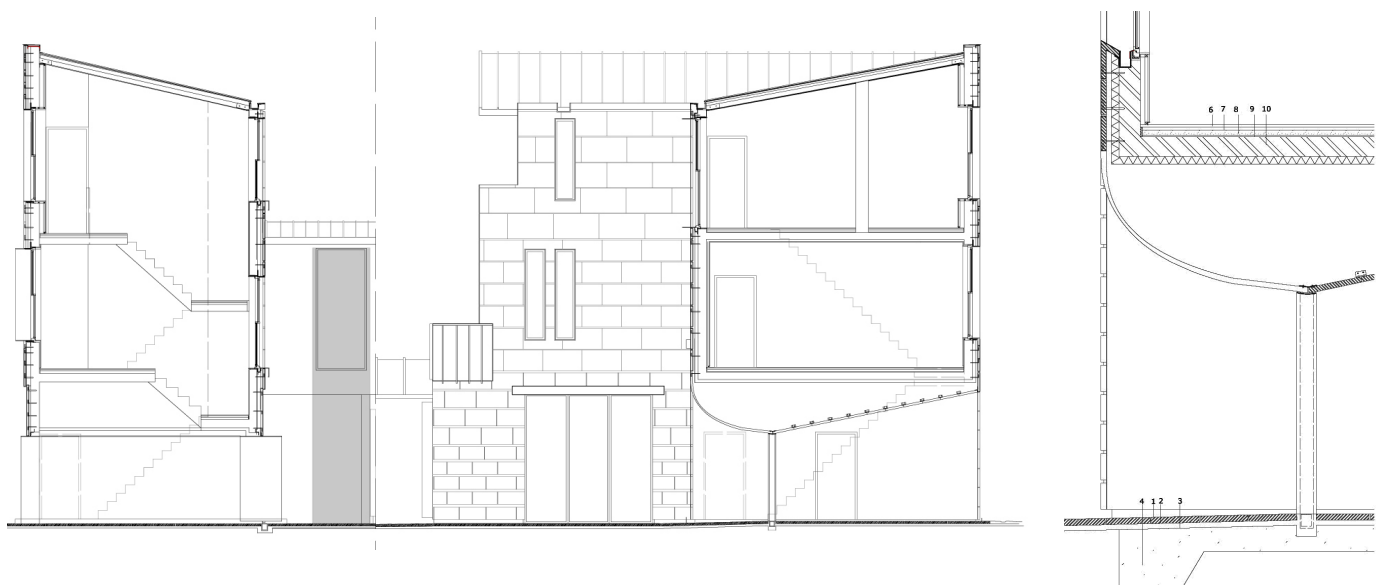


Every building and hard surface within the cartilage of a building must be designed and constructed with a surface drainage system that will ensure the disposal of surface water without threatening the building and the health and safety of the people in and around the building. Buildings should be designed to prevent water from entering doors and windows, to protect persons from falling water when around the dwelling, and to protect people from rainwater splashing on the ground. Paved surfaces should be laid so as to ensure rainwater runoff is not close to the building.

3.6 ENVIRONMENT | Surface Water Drainage

ATMOSPHERIC MECHANISMS Gillian Storrar

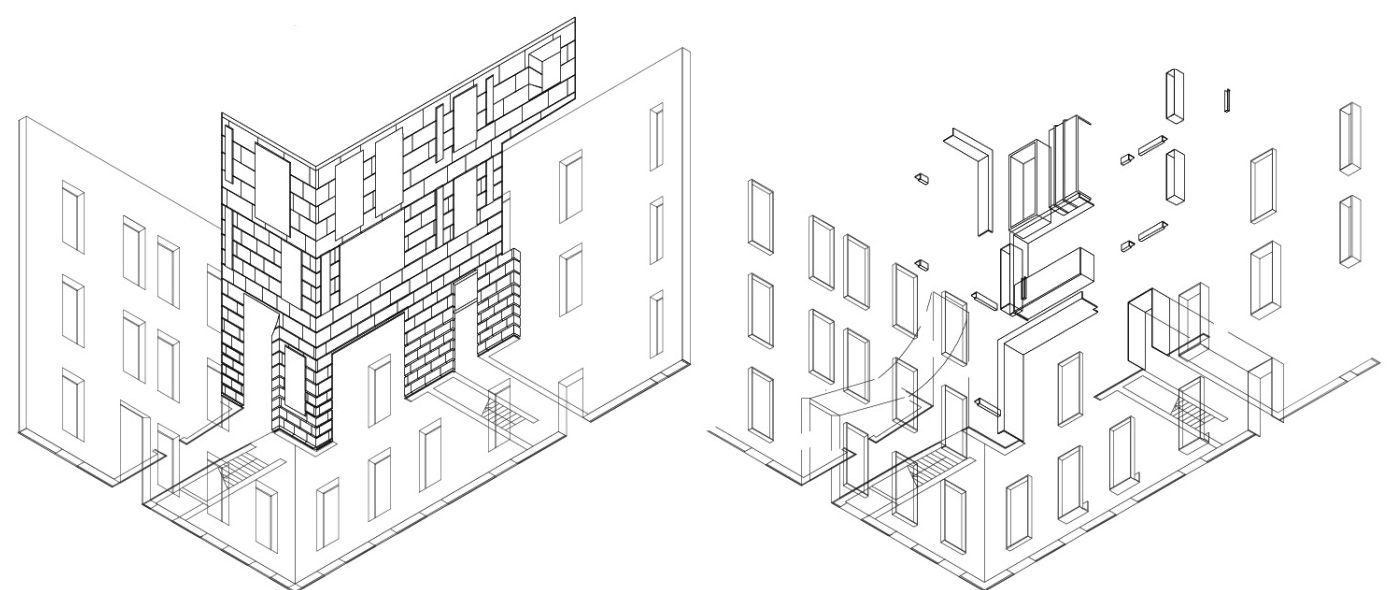
The mute façade of a New Town apartment building is carefully detailed to invite falling water into window boxes, loggia and a courtyard florist. The complex mechanism of a rain shower - its fine curtains, individual droplets, convex lozenges, thin sheets, and plaited cords – animates the tight vertical space, which supplies the appropriate calibrations, foils and sensitive surfaces.



Section through close and courtyard; soffit detail inviting water into close



Facade net of courtyard showing anticipated water-marks



Axonometric of stone cladding and zinc water threshold details

x1

1.7 m

1.7 m

x2

3.4 m

3.4 m

x3

5.1 m

5.1 m

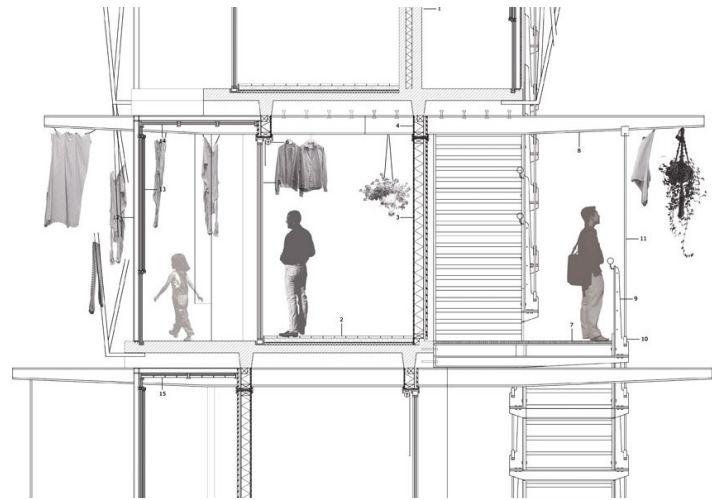
Every building must be designed and constructed in such a way that an accessible space is provided to allow for the safe, convenient and sustainable drying of washing. Since weather is unreliable in Scotland, a designated space for the drying of washing should be provided in every dwelling, and on ground immediately adjacent to the house. The area should allow for at least 1.7m of clothesline per apartment.

3.11.6
ENVIRONMENT | Drying of Washing

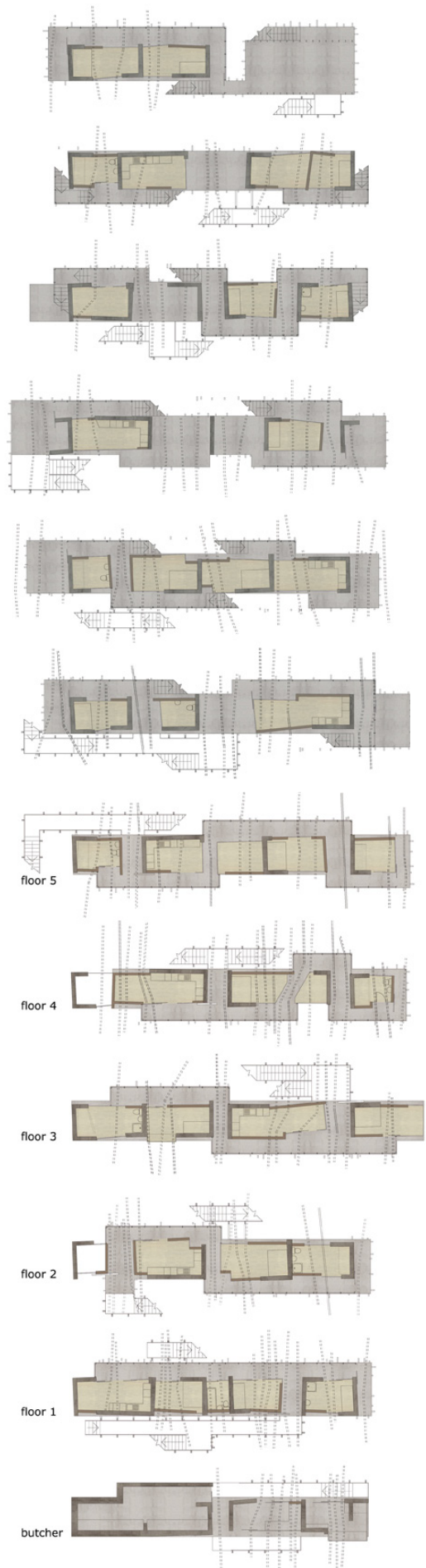
AERATING THE REGULAR

Daniel Goodacre

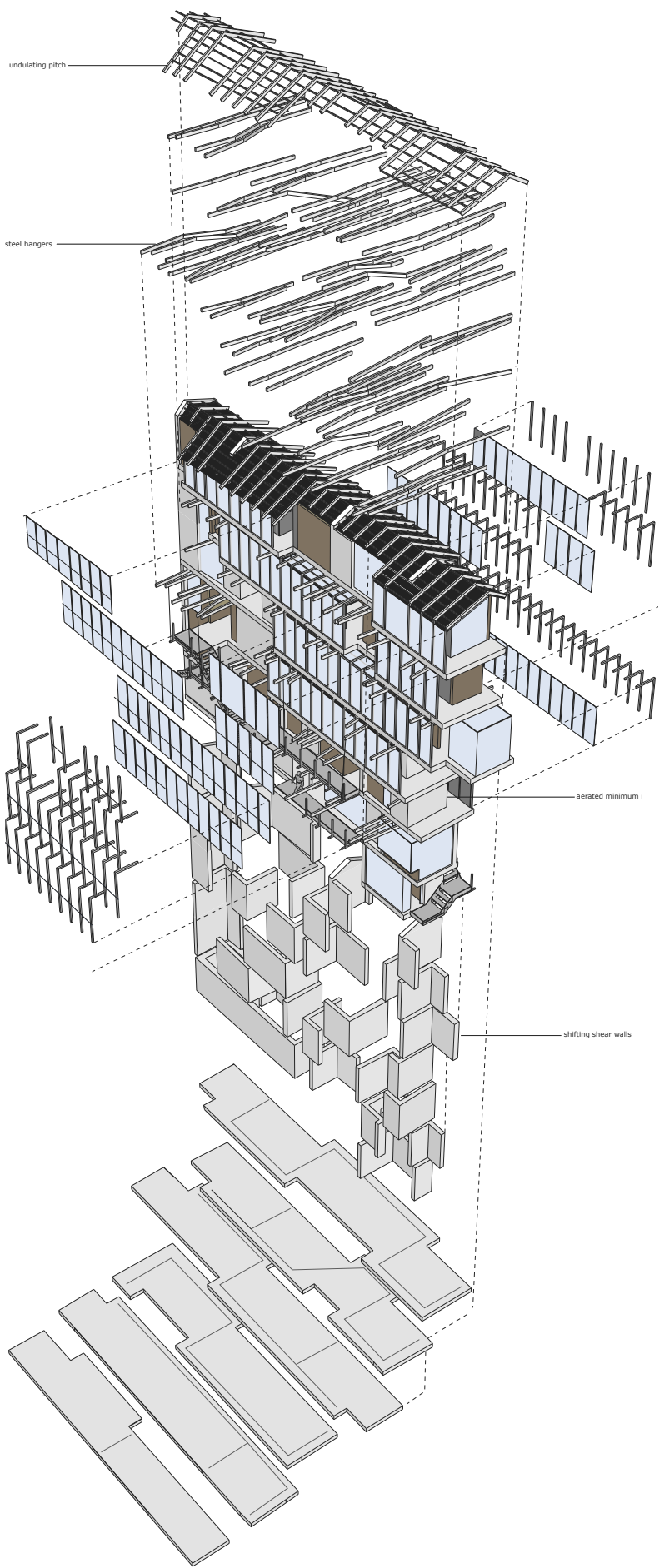
It is beautiful to watch the precision of regulation 3.11.6 (Why 1.7m? A full suit of clothes, a double bed spread?) come into contact with the chanciness of wind. This proposal for 11 apartments in an Edinburgh Close uses 84 instances of fluttering string as a guide to set several regular construction lines a-flutter; space standards, corridor routes, load paths, structural lines, panel centres, stair goings, roof pitches and drying lines.

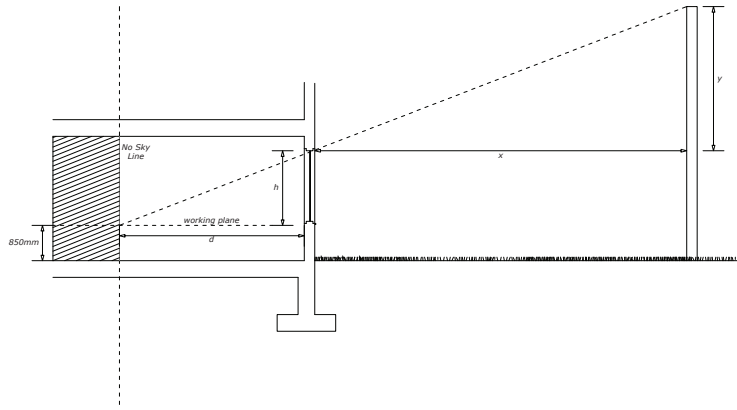


Detailed section of apartments and common stairs showing internal and external drying space; survey of regulation 3.11.6 thrown out of window



Floor plans; exploded axonometric showing corridor routes, sheer walls, cladding, common stairs, drying lines and roof construction





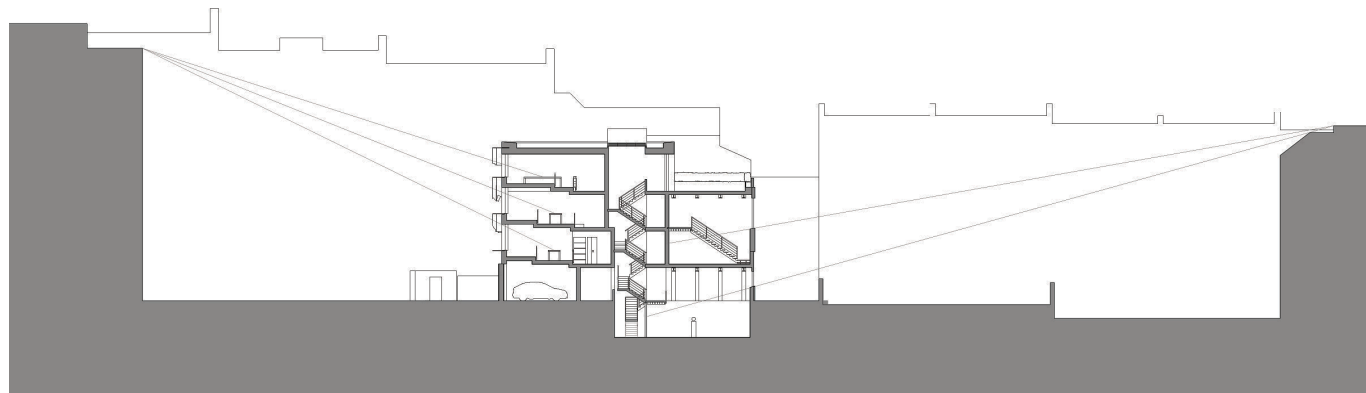
Every building must be designed and constructed in such a way that natural lighting is provided to ensure that the health of the occupants is not threatened. The 'no-sky line' defines the line in a room beyond which the sky is not visible. Supplementary planning guidance recommends that the amount of habitable space beyond the 'no-sky line' is limited.

3.16 ENVIRONMENT | Natural Lighting

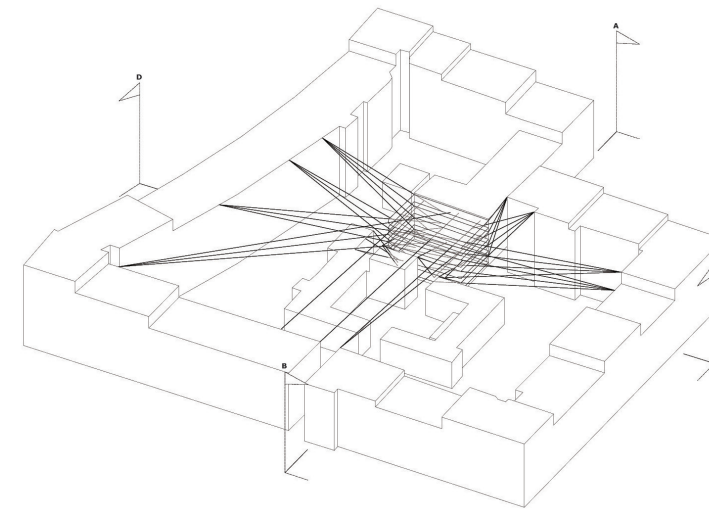
EYELINES AND SKYLINES

Alistair Blake

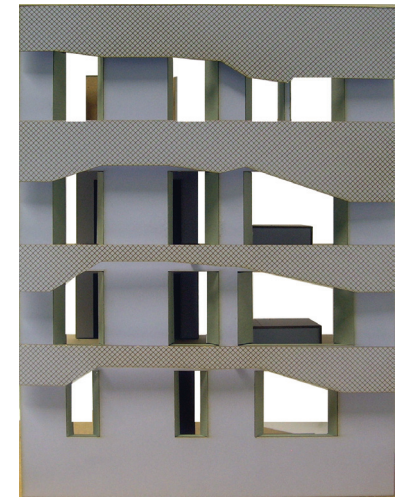
Recording the no-sky line on plan – projected through the aperture of a window - inscribes the surrounding context into building. In this proposal for artists' studios and apartments the arrangement of programme across floor slabs is inflected by the relation between an existing context and the shifting eyeline of the inhabitant. A layered façade modulates this relation, while plan and section subtly shift as they rise to the horizon.



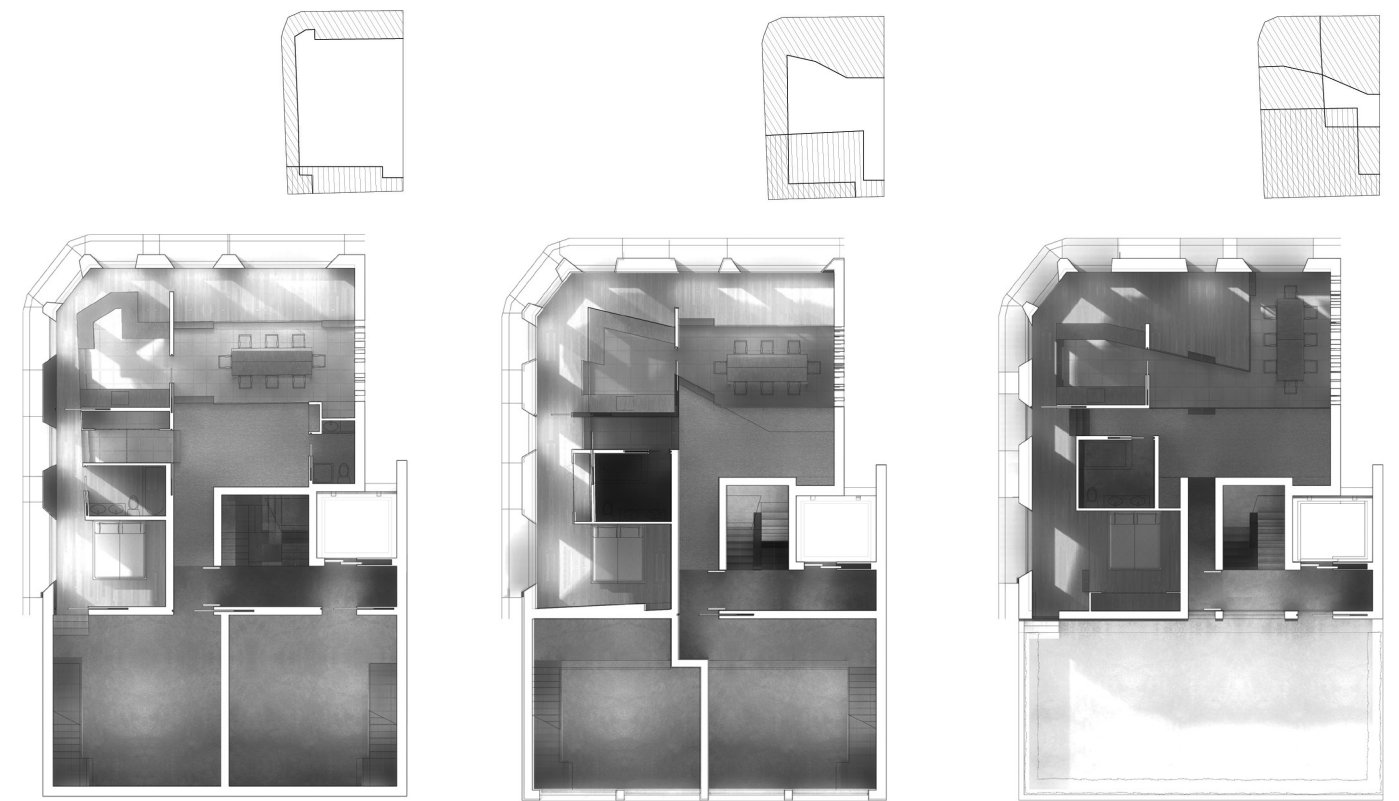
East-West section showing surrounding context, projected skyline and bed location



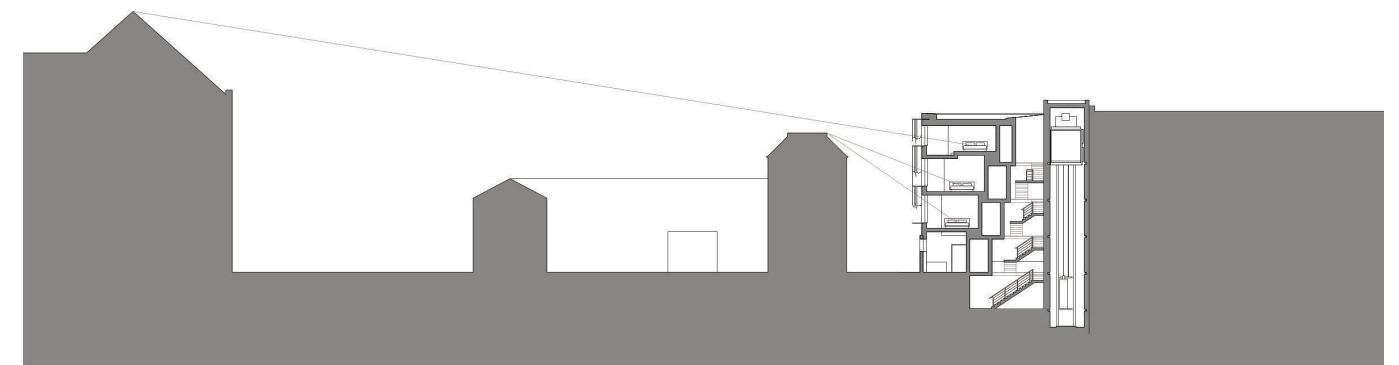
Axonometric showing no-sky line inscribed by context onto site at floor datums



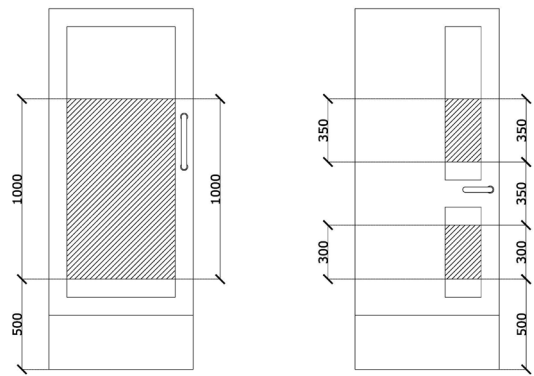
Facade model showing blinds, cills, windows, reveals and beds



Skyline diagrams and first, second and third floor plans



North-south section showing surrounding context, projected skyline and bed location

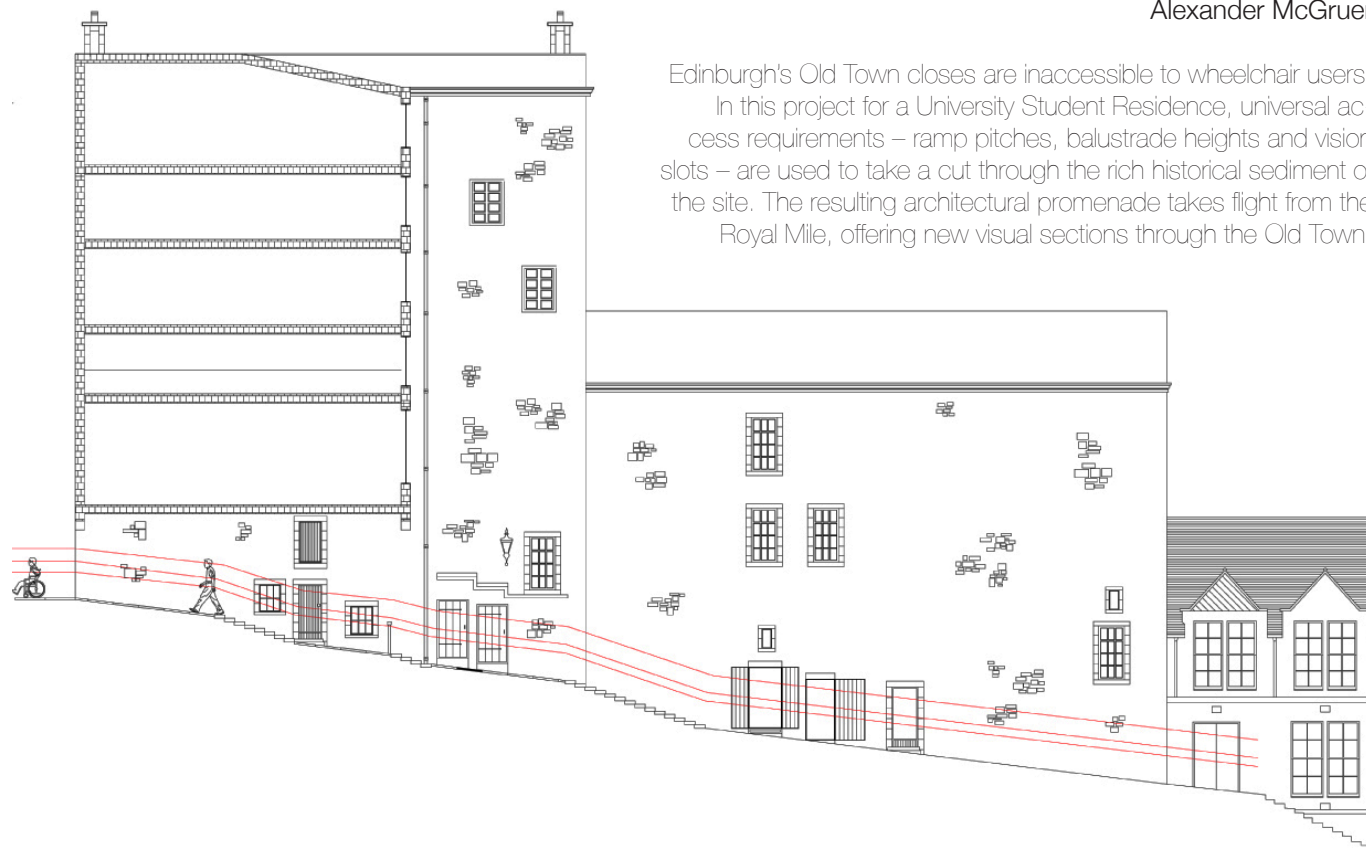


Every building must be designed and constructed in such a way that all occupants and visitors are provided with a safe, convenient and unassisted means of access to the building. To assist in preventing collisions, a clear vision panel to a door should give a zone of visibility from a height of not more than 500mm to at least 1.5m above finished floor level. This may be interrupted by a solid element between 800mm and 1.15m above floor level.

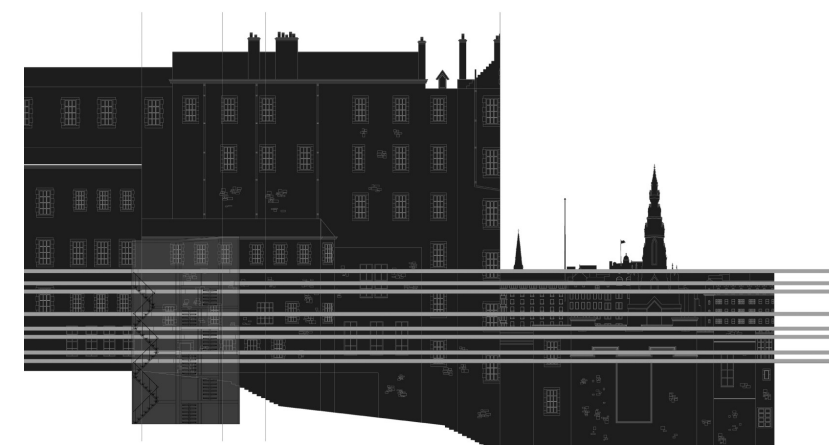
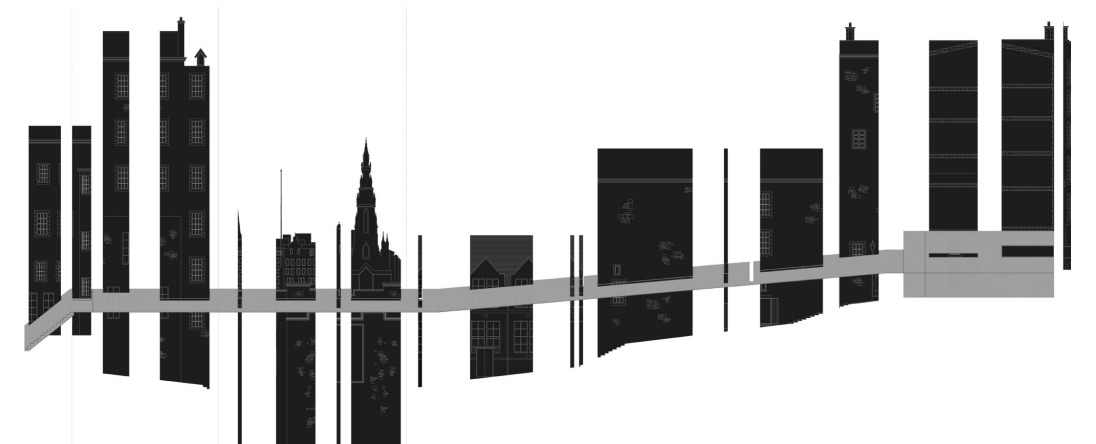
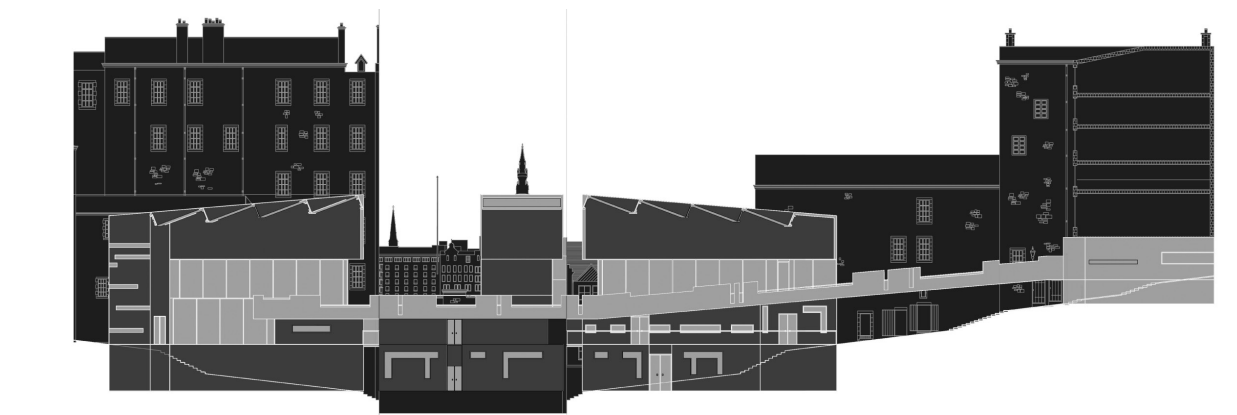
4.1.7 SAFETY | Accessible Entrance

VISION CUTS Alexander McGruer

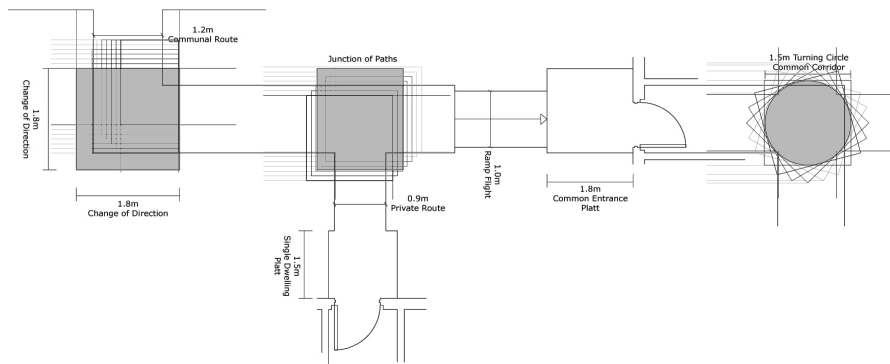
Edinburgh's Old Town closes are inaccessible to wheelchair users. In this project for a University Student Residence, universal access requirements – ramp pitches, balustrade heights and vision slots – are used to take a cut through the rich historical sediment of the site. The resulting architectural promenade takes flight from the Royal Mile, offering new visual sections through the Old Town.



Guide to accessible vision slots and survey of Advocates Close



Unfolded section of student residence; view of context from common area; view of context from accessible ramp; view of context from vision slots to common stair

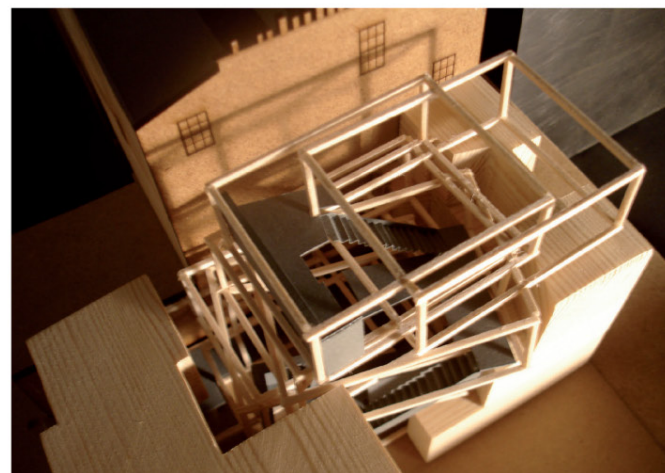


Every building must be designed and constructed in such a way that safe and convenient means of access is provided within the common areas and to each dwelling. The common areas of a domestic building remain in effect a public or shared area. Corridors should be wide enough to allow two-way traffic and manoeuvring at junctions or when passing through doorways. Where corridors are less than 1.8m in width, manoeuvring or passing places of not less than 1.8m in length and width and free of obstructions should be provided.

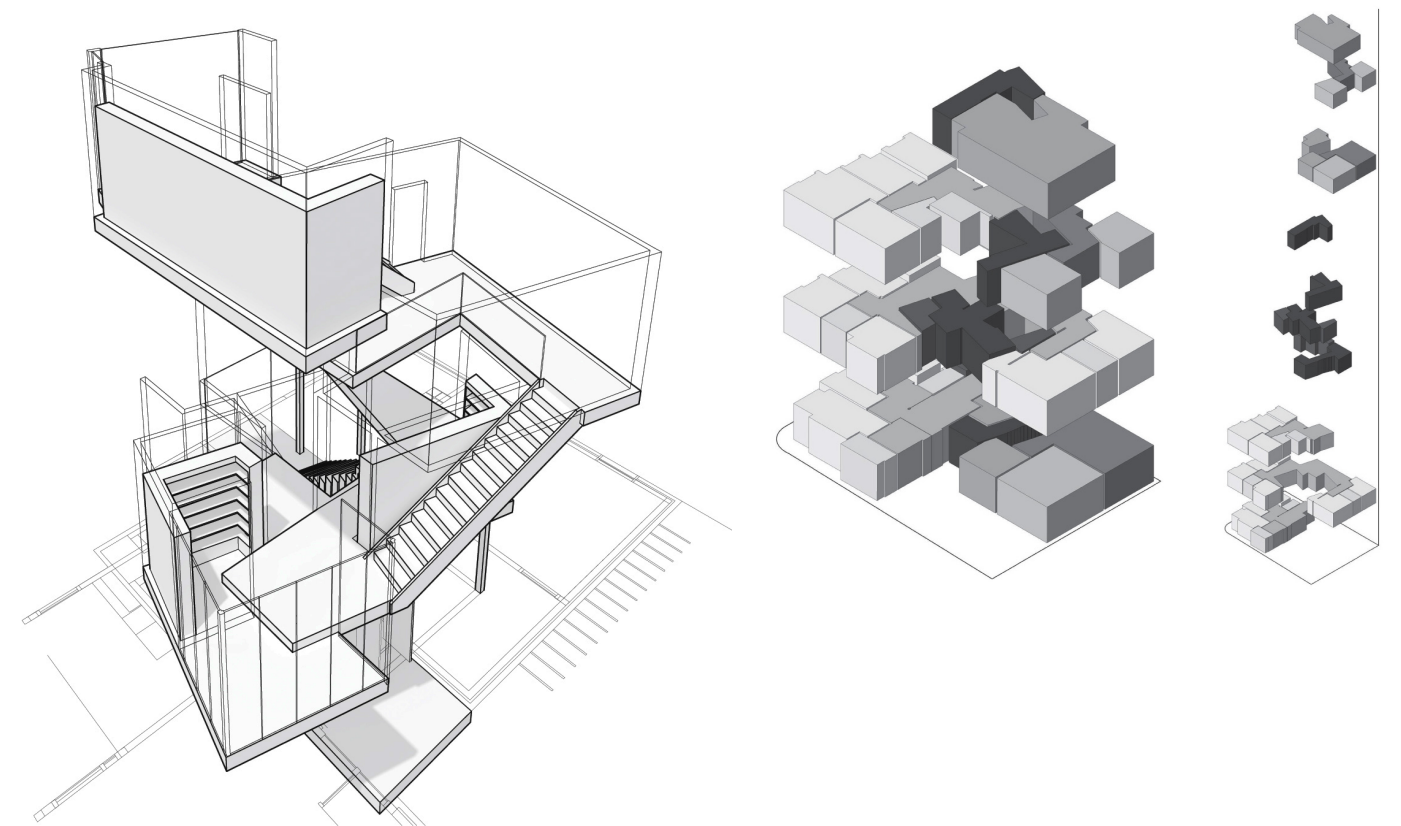
4.2.2 SAFETY | Access within Buildings

A SHIFTY CHARACTER Joel Woodier

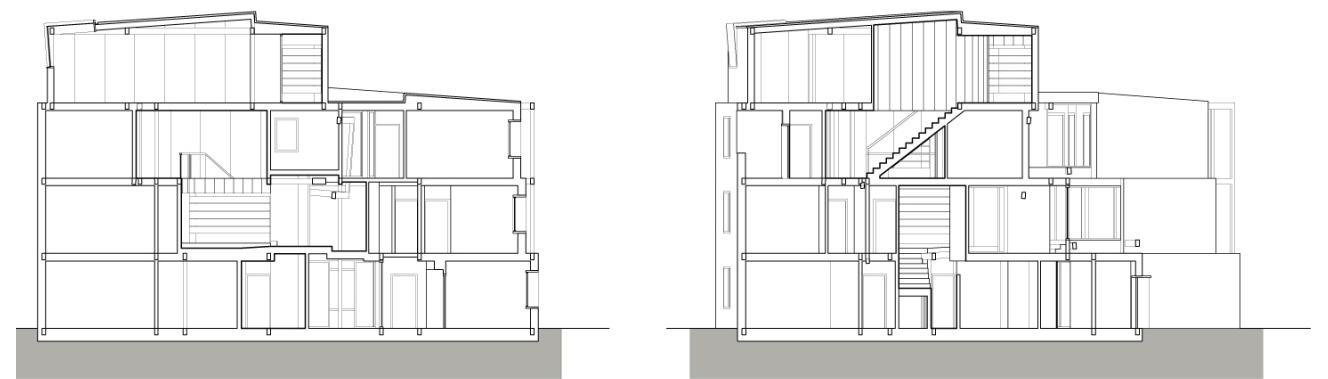
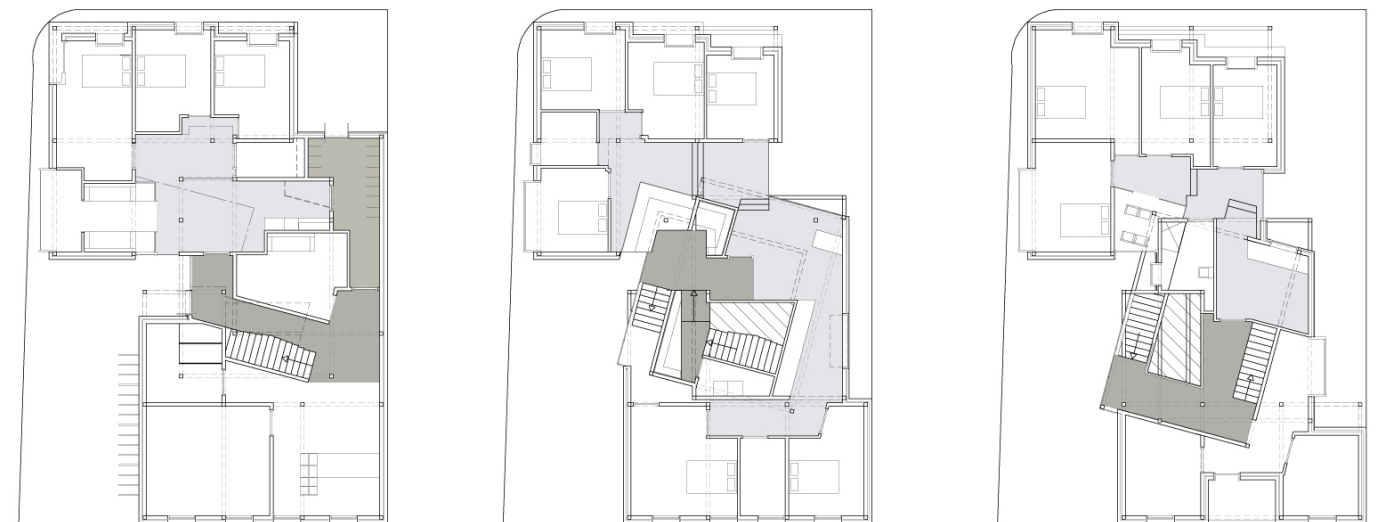
Regulation 4.2.2 opens the design of corridors to a degree of chance; the required increase in width can be achieved in a number of ways, responding to circumstantial factors. The shared common spaces of a Student Residence open the inhabitant's life to a degree of chance; whose glance will be caught when leaving the bathroom in a towel? A common stair is here animated by a series of small shared programmes that inscribe this social tension by enjoying and occupying the shifty limits of prescription.



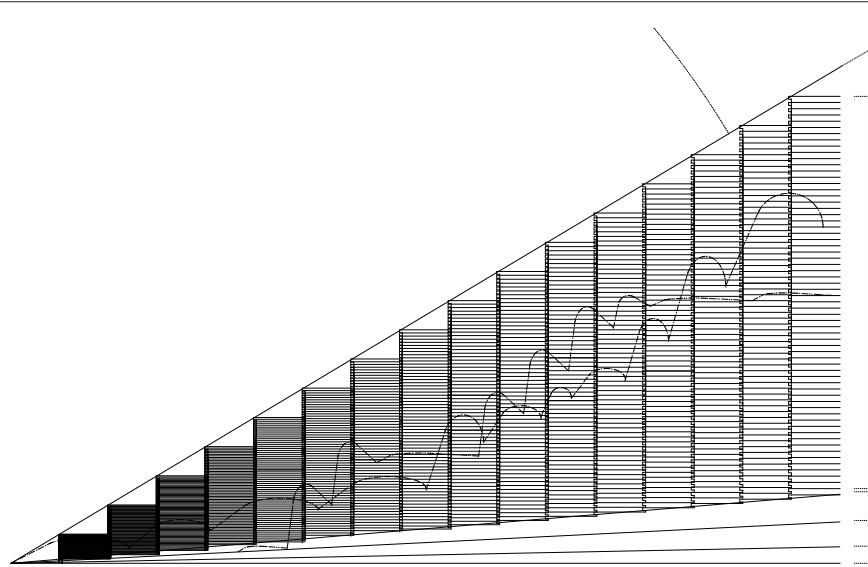
Model showing accommodation massing and stair structure.



Perspective of shared spaces in common stair; programmatic axo showing relation of private, semi-private and public spaces.



Plans and sections of Student Residence - private, semi private and public areas highlighted on plans.

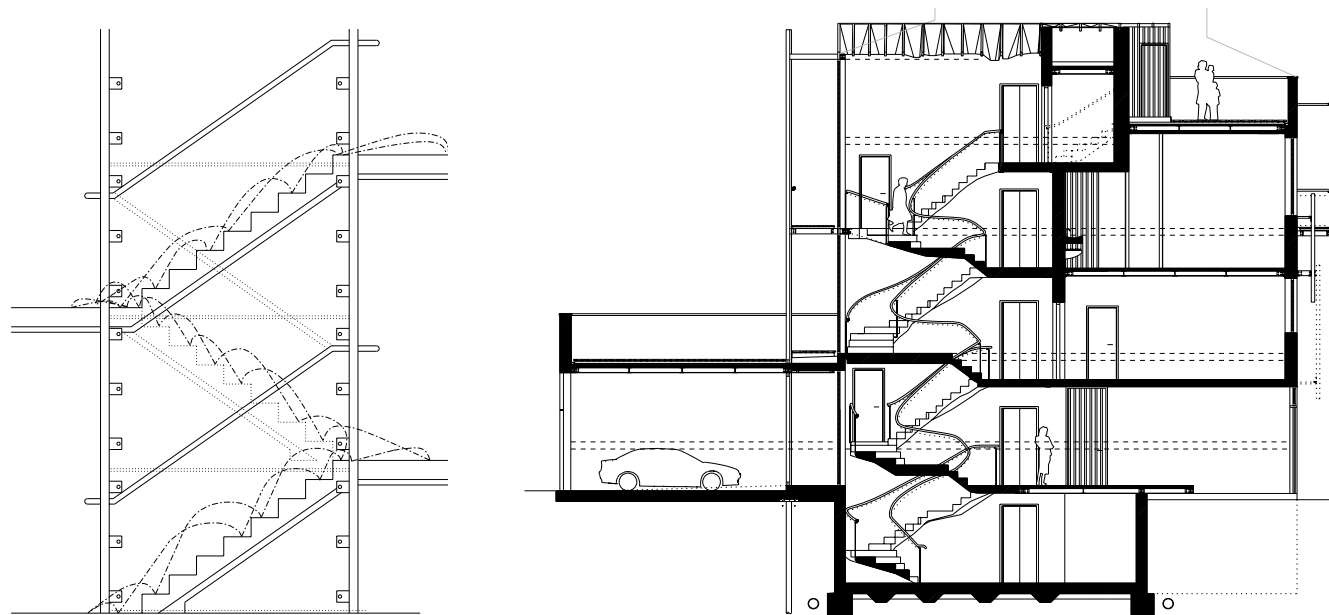


Every building must be designed and constructed in such a way that every level can be reached safely by stairs or ramps. The geometry of a stair can have a significant effect on the ability of people to use a stair safely and conveniently. The pitch of a private stair may be steeper than that of a public stair in recognition that users, as occupants, will be more familiar with the stair through frequent use. The maximum rise for a public stair is 170mm. The maximum rise for a private stair is 220mm.

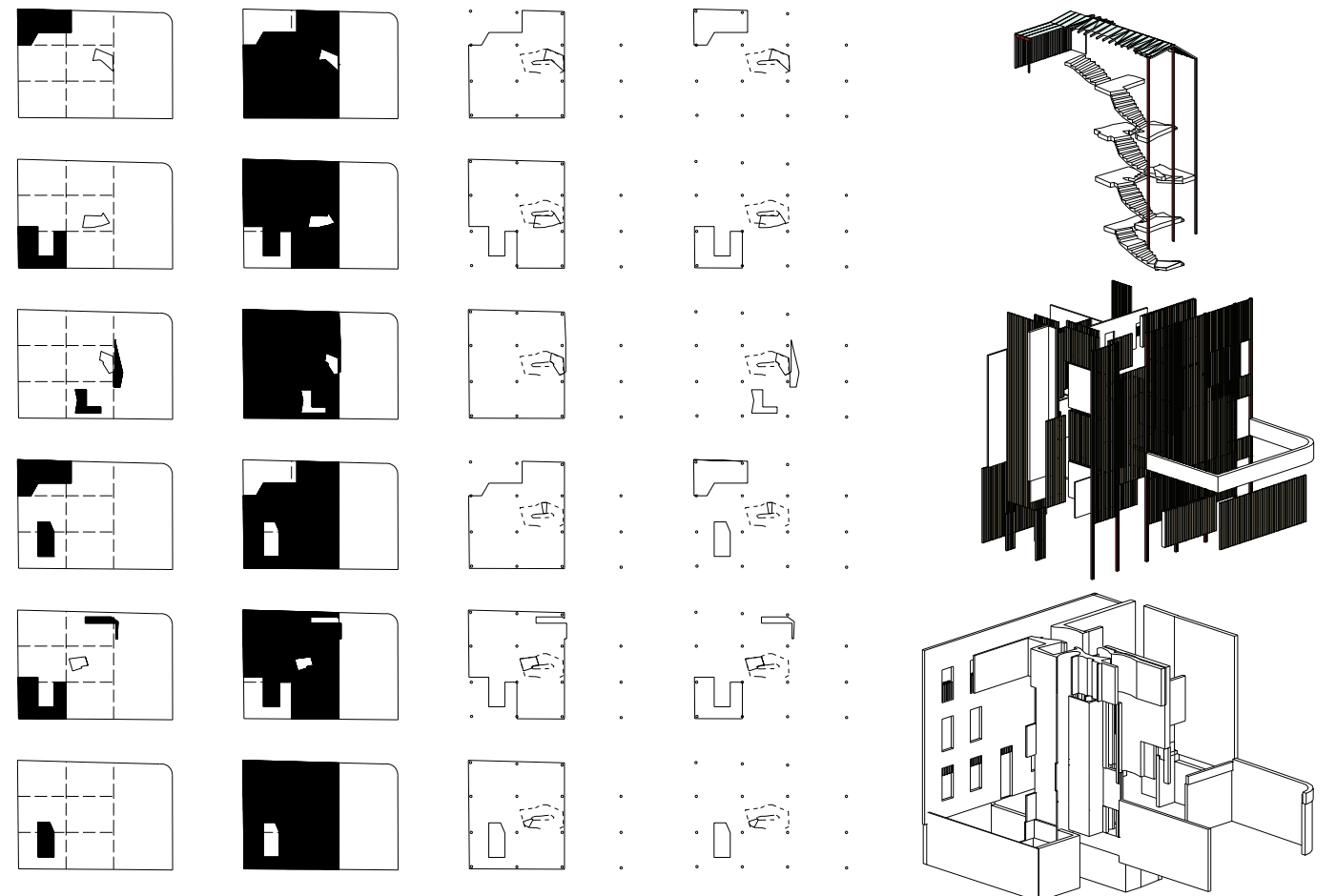
4.3.2 SAFETY | Going, Rise and Pitch of Stairs

LUNGE-PLAN Steven Bauman

Building occupants will trip-up and skip-down their stairs with a confidence born of familiarity. In this proposal for three psychiatrist's offices and residences, the regulating device of the stairs is inflected through a survey of jovial leaps; the resulting short flights set up a language of Work and Live. While the reception and office facilities occupy the principal levels - and are accessible by lift - the domestic programme occupies a Raum-Plan established by a series of half landings.



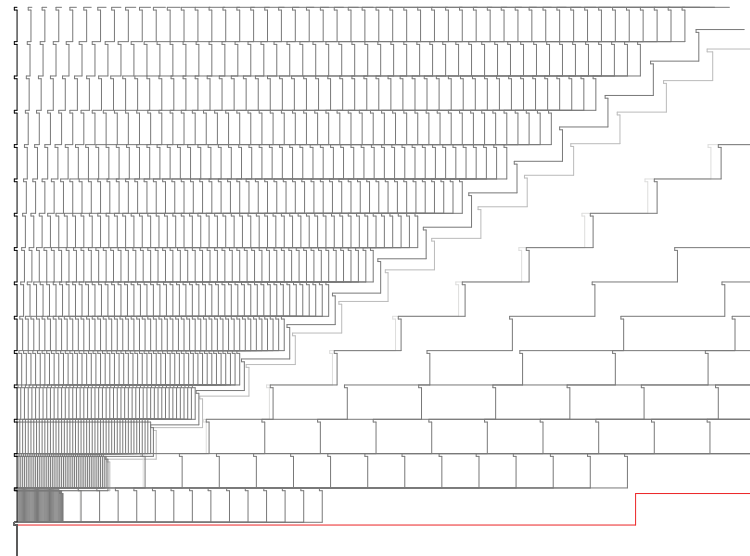
Survey of inhabitant lunging up compliant stair; section of stair showing half-landing generated.



Plan diagram showing stair landing and half-levels; exploded axonometric showing roof and stair structure, screened elevation, and core (incorporating lift and all wet facilities)



Plans showing stair rising (left-right, bottom-top) through series of half levels separating work and live programmes.



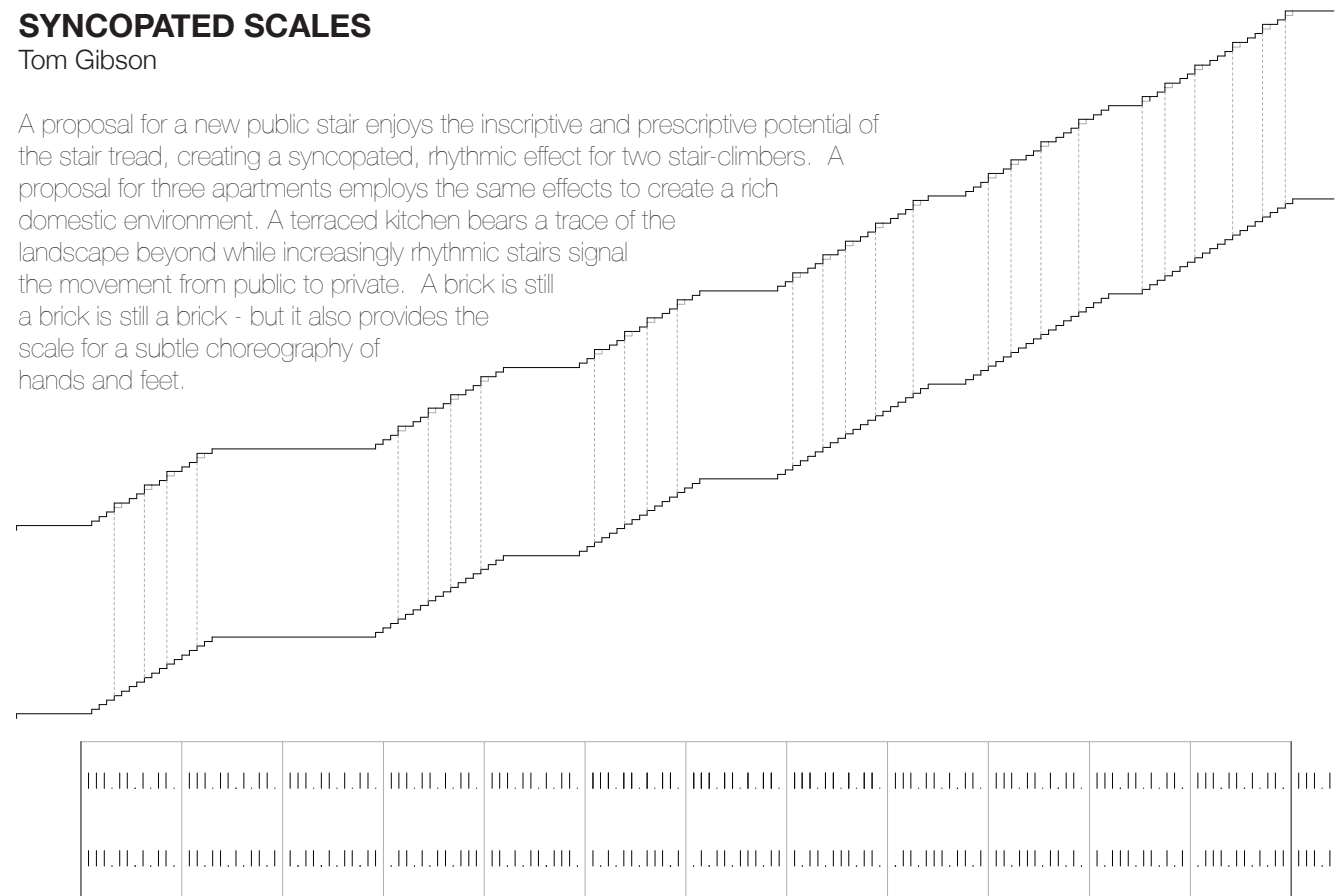
Every building must be designed and constructed in such a way that every level can be reached safely by stairs or ramps. The geometry of a stair can have a significant effect on the ability of people to use a stair safely and conveniently. The minimum going for a private stair is 225mm. The most comfortable combination of rise and going varies between individuals but in general, a going in excess of a minimum value will increase both safety and amenity.

4.3.2 SAFETY | Going, Rise and Pitch of Stairs

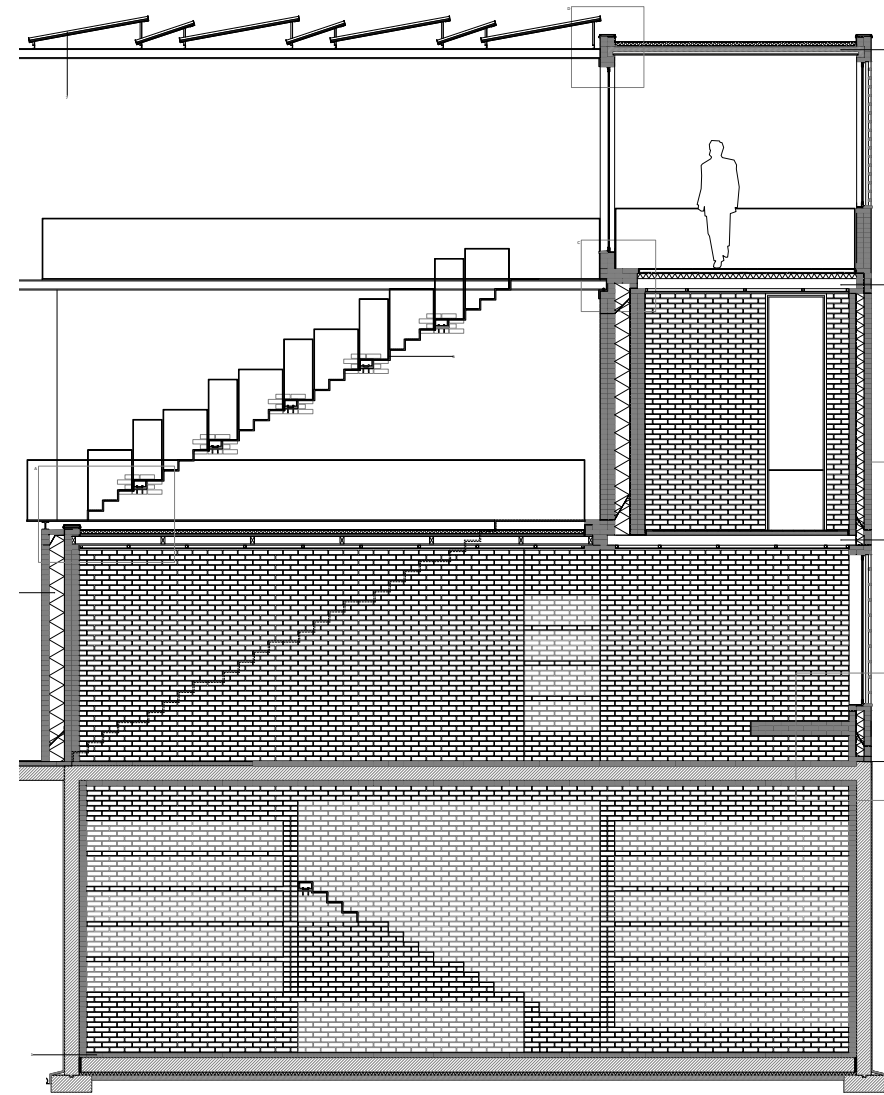
SYNCOATED SCALES

Tom Gibson

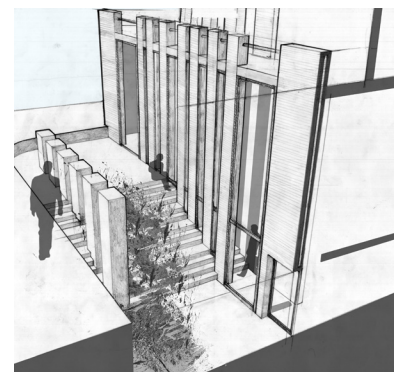
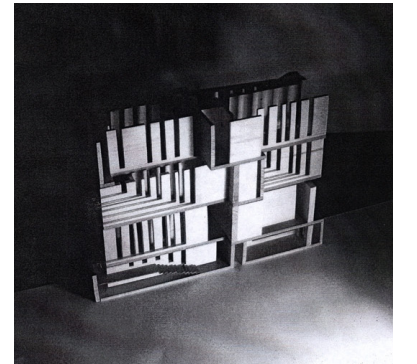
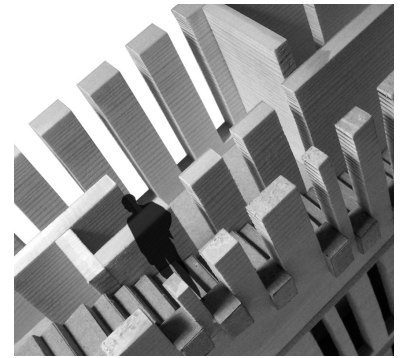
A proposal for a new public stair enjoys the inscriptive and prescriptive potential of the stair tread, creating a syncopated, rhythmic effect for two stair-climbers. A proposal for three apartments employs the same effects to create a rich domestic environment. A terraced kitchen bears a trace of the landscape beyond while increasingly rhythmic stairs signal the movement from public to private. A brick is still a brick - but it also provides the scale for a subtle choreography of hands and feet.



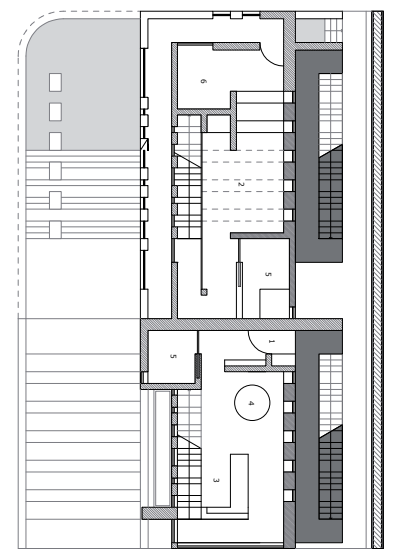
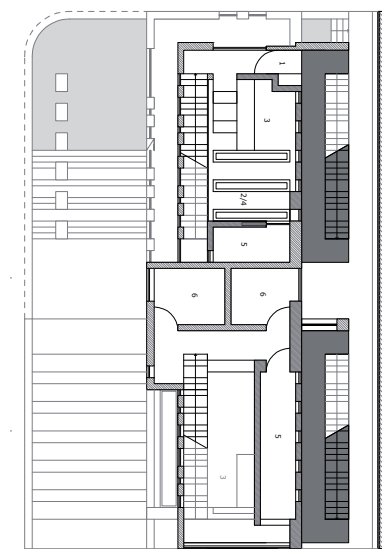
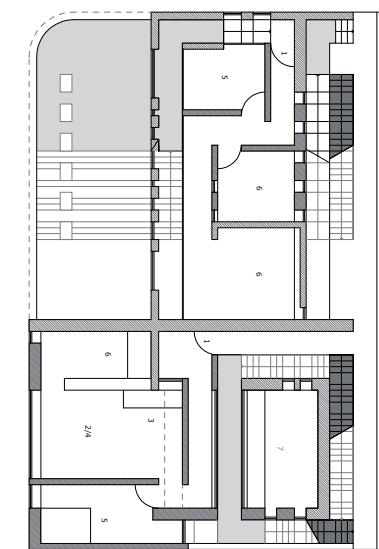
New News Steps: phase effects generated by scripting stairs to syncopated steps



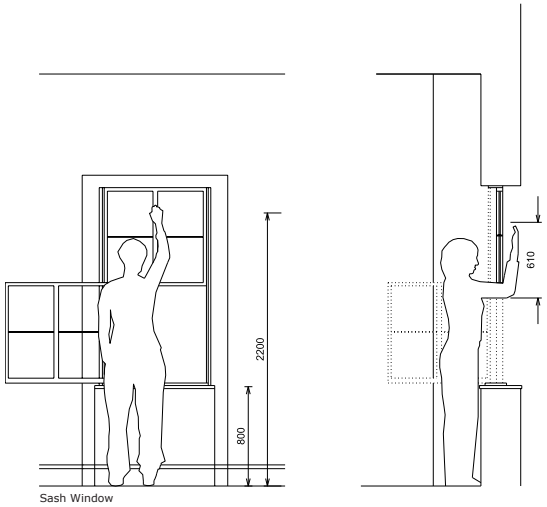
Section showing folded steel stair set-out to brick party wall.



Model and sketch showing brick piers



Plans of ground, first and second floors, showing public and private stairs, and terraced kitchen.

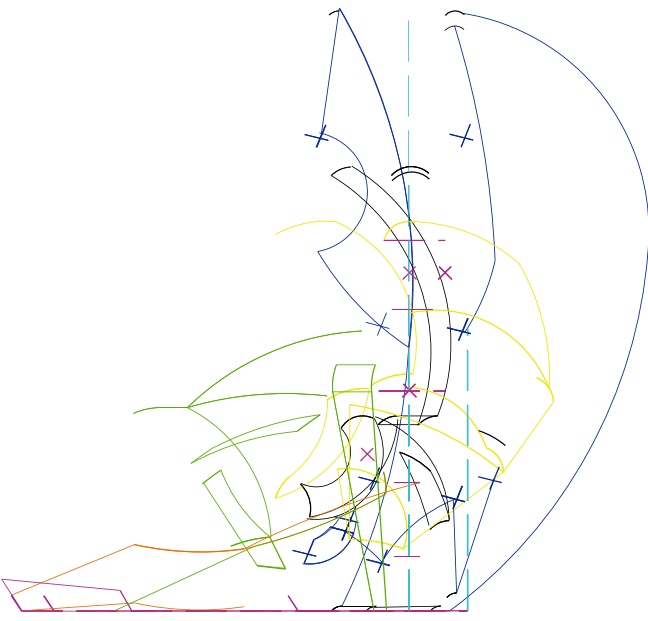


Every building must be designed and constructed in such a way that both faces of a windows are capable of being cleaned such that there will not be a threat to the cleaner from a fall resulting in severe injury. Any window of roof light more than 4m above adjacent ground should be designed so that any external and internal surfaces can be cleaned from within the building or from a load-bearing surface, such as a balcony or catwalk.

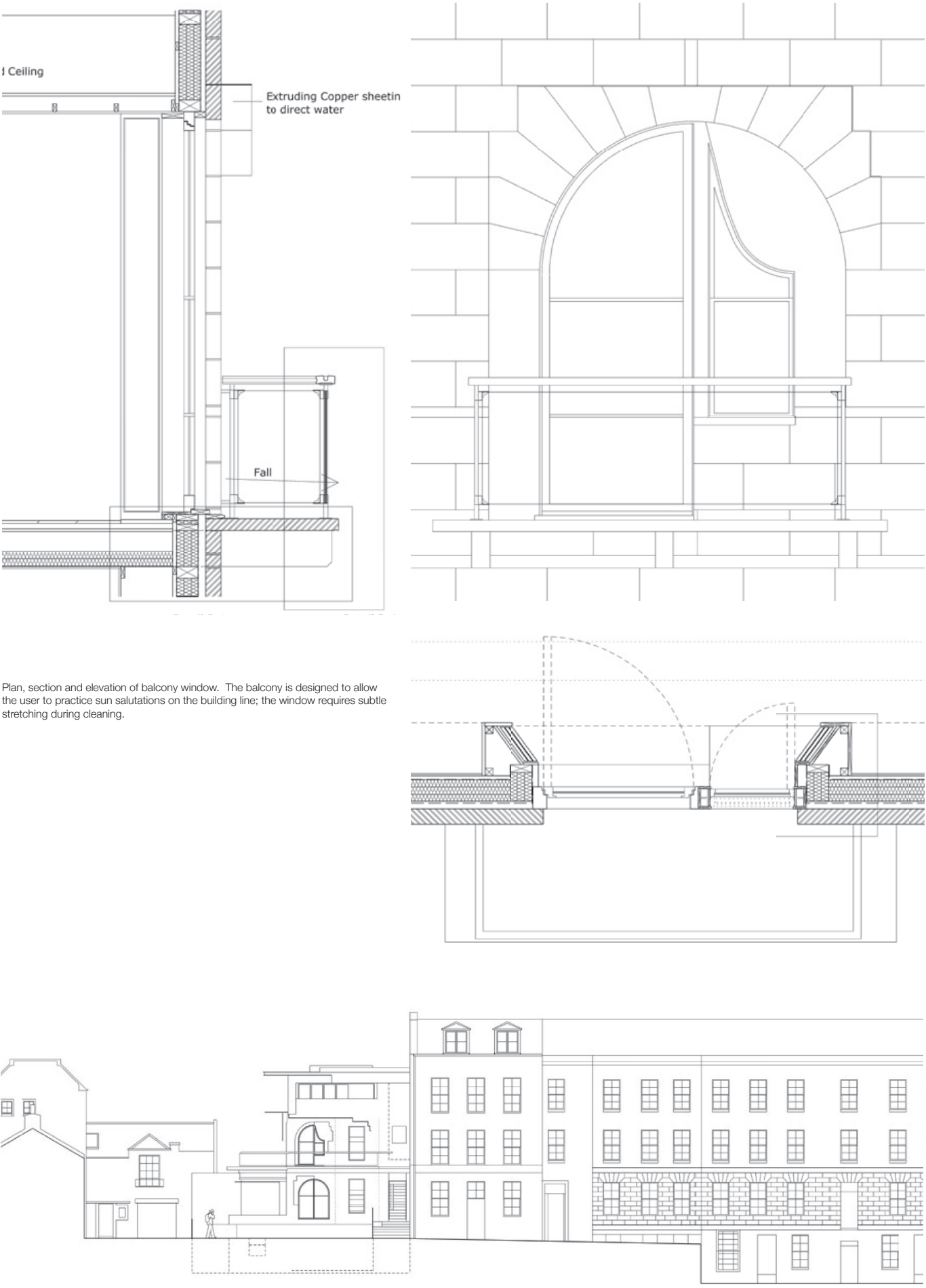
4.8.3
SAFETY | Cleaning of Windows

STAGED SALUTATIONS
Lucy Brooke

The British Standards limit the size of windows in buildings to limit the repeated risk of injury should an occupant overbalance while stretching. The Sun Salutation in Yoga promotes repeated gradual stretching which limits the risk of exercise and improves balance. Through small and carefully designed domestic fragments, this design promotes a subtle stretching of the regulations to create more celebratory, salutatory windows, while enjoying the fetishistic and therapeutic aspects of cleaning house.



12 Stages of the Sun Salutation: photographic and drawn survey



Plan, section and elevation of balcony window. The balcony is designed to allow the user to practice sun salutations on the building line; the window requires subtle stretching during cleaning.

North elevation showing subtle stretches inscribed on regimented New Town facade.

The selected projects were produced during an 11 week design unit for 4th year undergraduate students as part of the MArdes Honours programme, Department of Architecture, University of Edinburgh. Students were asked to study a single clause of regulation, identify the architectural issues raised by that regulation, produce drawings that explore the abstract potential of regulation, and to use these drawing to regulate the design of building. The course was offered in 2008 and 2009, making proposals for a mixed use development on a site in Edinburgh's Old-Town and New Town respectively.

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